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studied for one winter in the American School for Classical Studies in Rome, and for one summer in the University of Cambridge, England.

PROFESSOR WALTER MULFORD, of Cornell University, has been appointed head of the new department of forestry in the University of California. His duties will begin with August 1 next. Since there are 29,000,000 acres of national forest in California, besides vast areas of forest privately owned, the subject is one of great importance there. Dr. Patrick Beveridge Kennedy has been appointed assistant professor of agronomy. Dr. Calvin O. Esterly has been appointed as a biologist in the Scripps Institution for Biological Research at La Jolla.

MR. J. J. GALLOWAY, Ph.D. (Indiana), has been appointed instructor in geology at Indiana University.

MR. HALBERT P. BYBEE, M.A. (Indiana), has been appointed instructor in geology at the University of Texas.

MR. J. C. JOHNSON has been appointed to the chair of general biology, botany and zoology, at Auckland University College, in succession to Professor A. P. W. Thomas.

DISCUSSION AND CORRESPONDENCE

COLUMBIUM VERSUS NIOBIUM

At a meeting of the Council of the International Association of Chemical Societies in Brussels, last September, a committee on inorganic nomenclature, among other recommendations, endorsed the name and symbol "niobium" and "Nb," for the element which was originally named columbium. As this recommendation is historically erroneous, a brief statement of the facts appears to be desirable.

In 1801, Hatchett, an English chemist, analyzed a strange American mineral, and in it found a new metallic acid; the oxide of an element which he named columbium. A year later, Ekeberg, in Sweden, analyzed a similar mineral from Finland, and discovered another element, which he called tantalum. Wollas-

ton, in 1809, undertook a new investigation of these elements, and concluded that they were identical; a conclusion which, if it were true, would have involved the rejection of the later name, and the retention of the earlier columbium. The accepted rules of scientific nomenclature make this point clear.

For more than forty years after Hatchett's discovery, both names were in current use; for although Wollaston's views were accepted by many chemists, there were others unconvinced. In 1844, however, Heinrich Rose after an elaborate study of columbite and tantalite from many localities, announced the discovery of two new elements in them, niobium and pelopium. The latter supposed element was afterwards found to be non-existent, but the niobium was merely the old columbium under a new name. That name in some mysterious manner was substituted by the German chemists for the original, appropriate name, and has been in general use in Europe ever since. In America, the name columbium has been generally preferred, and was formally endorsed by the Chemical Section of the American Association for the Advancement of Science more than twenty years ago. In England, also, columbium is much used, as, for example, in Roscoe and Schorlemmer's "Treatise on Chemistry," Thorpe's "Dictionary of Applied Chemistry," and the new edition of the *Encyclopedia Britannica*.

The foundation of Rose's error seems to have been an uncritical acceptance of Wollaston's views; for he speaks of all the minerals he studied as tantalite. He also, at least in his original memoir, claims that the atomic weight of niobium is greater than that of tantalum, and here he was obviously wrong.

In short, the name columbium has more than forty years priority, and during that interval was accepted by many chemists, and was more or less in current use. To employ the name niobium is not only unhistorical, but it is also unfair to the original discoverer, meaningless, and without any justification whatever. Furthermore, it injures the splendid reputation of Rose, for it perpetuates and emphasizes one of his few errors. The recom-

mendation of the committee above mentioned should not be accepted, for it is opposed to the established rules of priority.

F. W. CLARKE

THE CYTOLOGICAL TIME OF MUTATION IN TOBACCO

IN the current volume of *SCIENCE*, p. 35, Hayes and Beinhart after describing the origin of a many-leaved variety of Cuban tobacco by mutation say:

This mutation must have taken place after fertilization, *i. e.*, after the union of the male and female reproductive cells. If the mutation had taken place in either the male or female cell before fertilization, the mutant would have been a first generation hybrid, and would have given a variable progeny the following season.

Is it not equally probable that the mutation occurred in an egg-cell which then developed without fertilization? Parthenogenesis is known to occur in tobacco, and mutation in a growing or immature germ-cell seems inherently more probable than in a fully formed and fertilized one. Perhaps the behavior of the additional mutants obtained in 1913 will throw light on the matter.

W. E. CASTLE

BUSSEY INSTITUTION,

January 2, 1913

SCIENTIFIC BOOKS

Analytical Mechanics. By HAROUTUNE M. DADOURIAN, M.A., Ph.D., Instructor of Physics in the Sheffield Scientific School of Yale University. D. Van Nostrand Company. Price \$3.00.

In his preface, the author states that his "work is based upon a course of lectures and recitations which the author has given, during the last few years, to the junior class of the Electrical Engineering Department of the Sheffield Scientific School." We expect this book to contain, therefore, several topics of special interest to students of electricity. We find a chapter devoted to "Fields of Force and Newtonian Potential," one to "Periodic Motion," one to "Energy" and one to "Work." But, as the author states, "In order to make the book

suitable for the purposes of more than one class of students more special topics are discussed than any one class will probably take up. But these are so arranged as to permit the omission of one or more without breaking the logical continuity of the subject."

The author himself is a physicist, and perhaps he intends this book to be suitable for classes in physics. The book seems to be written from the standpoint of the physicist rather than from the standpoint of the engineer. If this book is intended for the students of civil and mechanical engineering, then it must be said it has no advantage over the number of books already in the field. I doubt if it is even as suitable.

Judging from the recent discussions concerning the teaching of mathematics and mechanics, it seems that the successful book has not yet been written. Possibly the book everybody is looking for must be written on a new plan. To say that an author deviates from the generally acknowledged plan need not be a criticism of his book. Dr. Dadourian makes his volume unique in several ways, but I doubt if it will stand the test.

In the first place, he seems to avoid the graphical treatment. The modern tendency seems to be to emphasize this phase of the subject.

The question of "units" is always a source of contention between the physicist and the engineer. The absolute system of units is certainly the most logical. To the engineer, however, it is not a question of logic, but of adaptability.

Another departure from the usual mode of procedure in modern elementary text-books in mechanics is the extent to which he makes use of "vector addition." The first chapter is devoted to the subject of the "addition and resolution of vectors." On page 10 he gives the analytical expression for the resultant of any number of vectors, and the resolution of a vector into its three rectangular components. This section is made the basis of his whole book so far as the composition and resolution of vector quantities (forces, moments, couples, etc.) are concerned. All he needs to say is,